Supplier Quality Management Process

Good-Practice-Manual for Suppliers and Stakeholders

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rexroth
A Bosch Company

Preface

Quality is a key ingredient for success for the Rexroth brand. Our customers and their end-users place the highest expectations on our products.

Our target and our passion is to satisfy the expectations of our customers with “Best-in-Class” quality!

The early involvement of suppliers and the intensive cooperation already during the Product Engineering Process (PEP) before the series production plays an important role in order to achieve outstanding quality in the entire value stream for products and processes.

For several years we embarked on the path in a quality partnership with suppliers which is based on open communication. For this reason we are confident that we remain jointly successful on the market. This is also shown due to the exemplary development key performance indicators of suppliers, who already work according to the new processes intensively.

“Number-One-in-Quality” requires courage to change, discipline and consistency from all of us.

This Good-Practice-Manual describes comprehensibly the most important aspects of this quality framework. First, the manual provides information on our “Supplier Quality Management Process” (SQM), and, second, you will find guidelines to which we expect compliance from our suppliers and employees to the same degree.

We have defined the nature of reliable processes between Bosch Rexroth and its suppliers and what methods must be adopted to guarantee long-lasting quality.

Suppliers in our quality partnership understand this and they actively practice the process for implementation and continuous improvement.

DC/PU
Leitung Einkauf
Ludwig Merz

DC/PUQ
Leitung Qualitätsmanagement Einkauf
Claudia Schiffhauer

Aim
This Good-Practice Manual defines the tasks for the cooperation between Bosch Rexroth and its suppliers in respect to quality assurance for products (products, raw materials and trade goods) and from the selection of suitable suppliers to the monitoring and improvement in the series production.

Application area
The Good-Practice Manual is applied to projects and processes in the supply management between Bosch Rexroth AG, its subsidiaries, and the respective suppliers.

Responsibility
Purchasing quality management is responsible for the content and management of this manual.
All Bosch Rexroth business units contribute to the development and improvement of this manual.

Short description
The Bosch Rexroth Supplier Quality Management Process describes the following procedures:

- Selection of suppliers and their qualification
- Quality development & engineering with suppliers and quality performance contracts
- Initial sample inspection and parts approval
- Series production, series delivery and change management
- Key performance evaluation and targeting process, as well as in case of deviations from Bosch Rexroth requirements
- Feedback on all phases of process and continuous improvement

INHALTSVERZEICHNIS

SQM Process Description and Details

DCCD 08016-41
Supplier selection

DCCD 08016-43
Contracting & parts release

DCCD 08016-42
Qualification, enabling and development of suppliers

Planning & Preparation

Engineering & Contracting*

Parts & Process Approval

Supplier approved for RfQ

Technical Sourcing Review

Feasibility Confirmation Supplier

- Certificate Checking
- Q-System accepted (QAA)
- Supplier evaluation
- Requirement profile product, material
- Q-Targets:
  - ipm
  - ppm
  - initial sample recursions

QG0

- Important Characteristics **GPc 3**
- Lessons learned **GPc 5**
- Supplier Quality Plan SQP **GPc 6**
- Specification up-to-date & complete **GPc 7**
- TSR **GPc 8** incl. Pre-TSR
- Feasibility Confirmation **GPc 9**
- Contracting
- Technical risk analysis (recommendation: FMEA)
- Inspection plan **GPc 10**
- Design validated

QG1

QG2

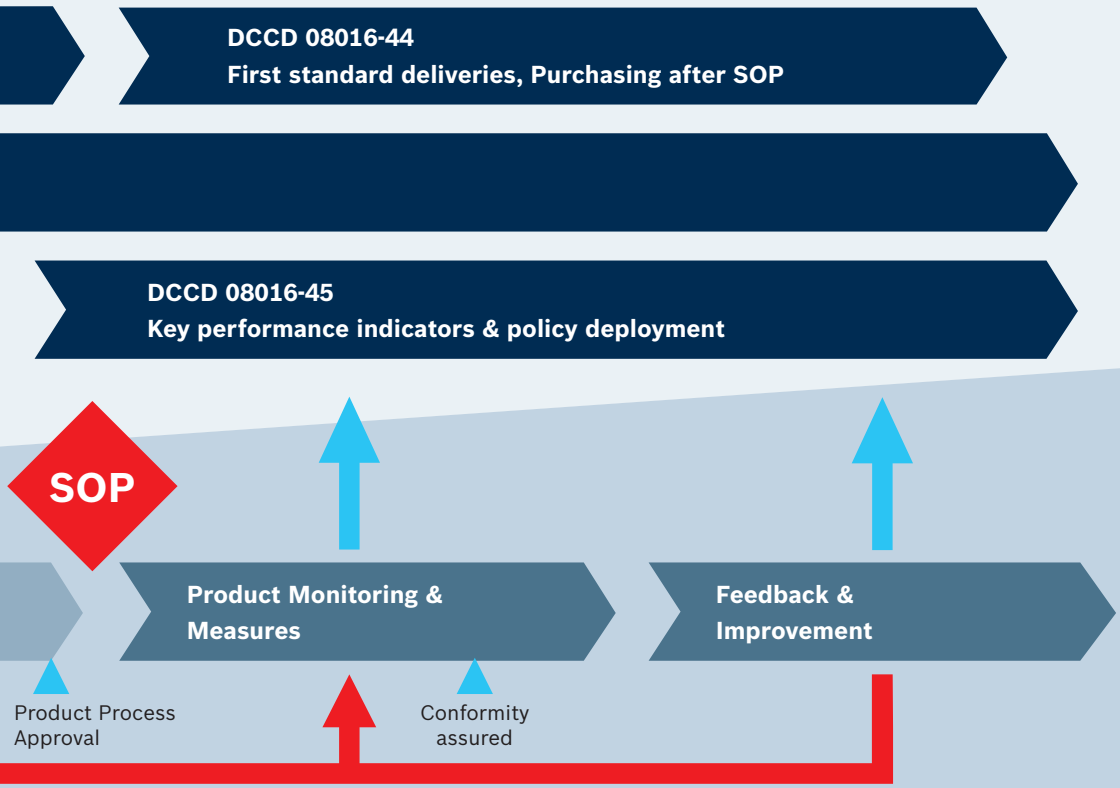
Parts release:

- Initial sample inspection (ISIR Point CIP) **GPc 12**
- Installation test (fit, form, function)

Process release:

- System validation
- Product Process Approval (PPAP) **GPc 16**
- Ramp-up (Run@Rate for automotive industry on customer request)

QG3



Internal central department directives (DCCD) outline all phases of the Procurement Process. The main goal is to most effectively support development activities and continuous product improvement throughout the life-cycle of the product.

- Parts inspection
- SPC
- Target and key performance tracking (ipm, ppm, PUE ppm, initial sample recursions) **GPc 17 and 18**
- SRM (Supplier Relationship Management)
- Claims management 8D-Reports incl. assessments
- Early warning systems (Q-Alert)

QG4

- Process audit **GPc 21**
- Supplier Development
- Awards
- Quality Programs (Q focus program, supplier learning factory)
- Change request (ECR) **GPc 23**
- CIP
- Process improvement review **GPc 21**

QG5

QGs are linked to Product Engineering Process PEP

To optimize cooperation with suppliers, important deliverables are described as Good Practices. The focus of these **“GPc’s”** is prevention through joint reviews with suppliers. They are continuously revised and updated, if necessary.

* Based on the project targets and customer requirements

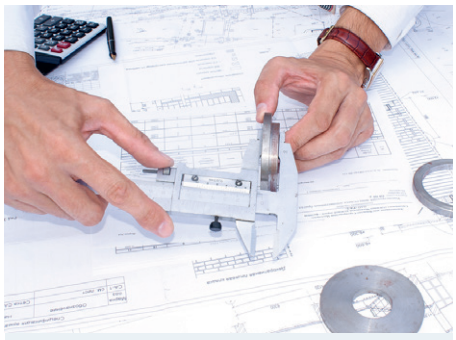
Typical Customer Requirements

- Zero-defect target
- Safety stock, ability to supply and capacity consent
- Validation of important characteristics
- PEP in reconciliation with customer (e.g. PPAP)
- Ship-to-line concepts
- Close control of processes at supplier
- Processing of complaints according to 8D method
- Take over external failure costs
- Management System (e.g. ISO 9001, ISO 14001)
- Efficient escalation processes
- Material conformity (REACH, RoHS, TSCA)
- Notification of changes with customer approval (process, product)

Quality expectations for our suppliers

INCOMING INSPECTION

- Optimized quality assurance measures and inspections at supplier
- Avoid double-work without compromising quality
- Target: Ship-to-stock / Ship-to-line
- Use possibilities of digital collaboration (SUPO, connected supplier)
- If failure occur: sustainable problem solving (8D, TRC, MRC, SRC, LRC)



INITIAL SAMPLES

- Initial samples are perfect – avoid recursions
- Supplier self-declaration of part conformity (warrant): confirmation, all require-ments fulfilled
- Use part family releases instead of single ISIR
- Use of electronical initial sample inspection report (eISIR)
- No need for DC to confirm dimensions submitted by the supplier

CAPABILITY AND AUDITS

- Self-driven measures for continuous improvement and control plans
- 8D failure cluster analysis
- Process capabilities, process reviews, sustainable failure prevention
- Use 3rd party audits to improve your processes
- Use of remote technologies (e.g. MS Teams)

WE EXPECT THAT OUR SUPPLIERS TAKE INITIATIVE!

Overview Good Practices “GPc”

GPC 3

Important Characteristics

GPC 5

Lessons Learned Similar Products and Projects

GPC 6

Supplier Quality Plan (SQP) – Quality Planning during Procurement

GPC 7

Specification up-to-date & complete

GPC 8

Technical Sourcing Review (TSR)

GPC 9

Feasibility Confirmation of Supplier

GPC 10

Inspection planning

GPC 12

Initial sampling

GPC 16

Production Process Approval

GPC 17

Key Performance Indication and Policy Deployment – out of preventive Quality Assurance

GPC 18

Key Performance Indication and Policy Deployment – after SOP

GPC 21

Auditing of suppliers

GPC 22

Sub-Supplier Quality Management

GPC 23

ECR in Purchasing

Hinweis:
GPc available in SOCOS at 07416-XXX (http://inside.bosch.com/alias/dc/gpc-manual-EN)

GPc 3

Important Characteristics

Task Owner	Development		
1. Description	Product characteristics or production process parameter which effect safety, compliance of official regulations, correct fit, form, function or further processing are “Important Characteristics”. These potential important characteristics are identified by R&D Department. The supplier considers the important characteristics defined together with Development and Purchasing in his manufacturing processes.		
2. Result	Important characteristics are documented and clearly marked in drawings or specifications as reference for validation and part release (e. g. critical characteristics) resp. documented in reference lists (DC 08918).		
3. Scope	Drawing related parts and components. SQP Scope 2 & 3		
4. Due date	Definition of potential important characteristics prior to RfQ. Verification of the process control measures to insure important characteristics during ISIR, technical risk analysis or process audit resp. process approval (DCGP 07416-16).		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 3	Project Purchasing, Development, Purch. Quality Mgmt.	Appendix GPc 3
	▶ Up-to-date drawings (incl. important characteristics), parts lists, material specifications	Development	
	▶ Specifications under consideration of standards and regulations	Development	
	▶ Lessons learned, complaint book of similar products (end of line, 0-km, field)	Project Purchasing, Supplier	
	▶ Product characteristics	Development, Supplier	
	▶ Critical failure mode from D-FMEA	Development	
6. Method	▶ Potential important characteristics are identified and documented e.g. by development at Design FMEA ▶ Technical purchasing provides the supplier drawings, the potential important characteristics as well as failure mode and impacts (from Design FMEA) as part of RfQ ▶ Supplier verifies feasibility of process control ▶ Supplier conducts technical risk analysis (recommendation: FMEA) ▶ Supplier implements appropriate measures to ensure important characteristics into manufacturing process after discussion with Bosch Rexroth (generally project purchasing) ▶ Supplier verifies consideration of important characteristics during ISIR and Process Approval (DCGP 07416-16), contracting and parts release		
References	▶ DCCD 08918 ▶ DCCD 08016-43 ▶ DCCD 08914-1 ▶ DCFR 07416-3 ▶ DCGP 07416-16		

* Terminus “Key Product Characteristics” only allowed in connection with customer requirements according to IATF16949.

GPc 5

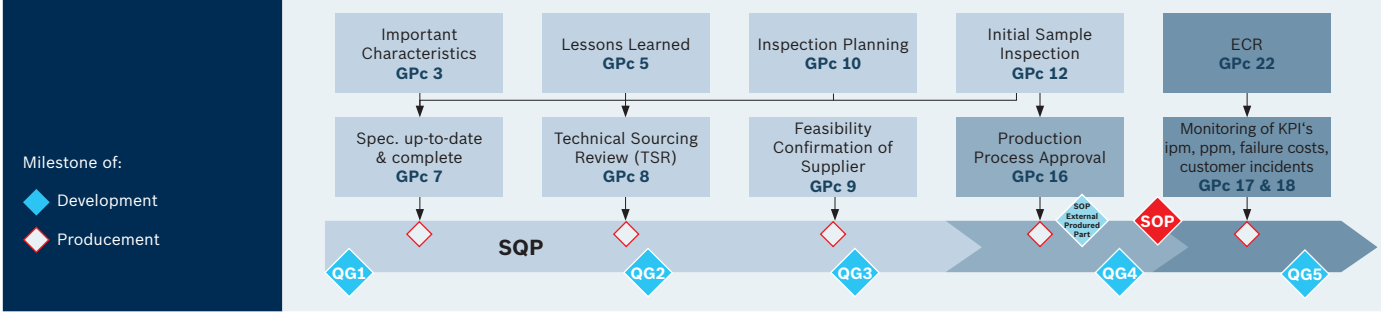
Lessons Learned Similar Products and Projects

Task Owner	Project Purchasing		
1. Description	Analysis of all internal or external defects and weak points at Bosch Rexroth or supplier based on a complaint list including possible counter measures. Consideration and implementation of counter measures in new processes.		
2. Result	Production and logistics are able to address existing and potential failures through preventive action. Feedback for new developments and continuous improvement for existing parts is communicated to development and manufacturing planning.		
3. Scope	Drawing related parts and components. SQP Scope 2 & 3		
4. Due date	At Technical Sourcing Review (QG2), latest before series tool release or technical risk analysis (recommendation: FMEA)		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Defects and weak points at manufacturing process (QAM)	Manufacturing/Assembly	
	▶ Technical risk analysis (recommendation: FMEA) / process audits	Manufacturing/Assembly, PUQ Techn. Specialists	
	▶ Complaint list (internal & external)	Q-Mgmt. and HSE, Supplier, Purch. Quality Mgmt., Manufacturing/ Assembly	
	▶ 8D Report	Manufacturing/Assembly, Purch. Quality Mgmt.	
	▶ Work instructions for production	Manufacturing/Assembly, internal	
	▶ Inspection plan	Internal, Supplier	
	▶ Parts validation results	Development	
6. Method	▶ Analysis of main faults in production (manufacturing/assembly) ▶ Possible failures and corrective actions from QAM or 8D Report to be considered ▶ Complaint list of faults and corrective actions to be completed ▶ Checking current production status by means of additional parts sampling is also possible ▶ Technical risk analysis (recommendation: FMEA) to be completed ▶ Prepare a ‘Lessons learned check list’ for external use (DCFR 07416-005) ▶ Transfer to supplier for consideration in his process planning and confirmation of feasibility (DCGP 07416-9) ▶ Lessons learned to be part of supplier employee training and work instructions ▶ Inspection plan to be updated ▶ Supplier implements counter measures latest before Process Approval (DCGP 07416-16)		
References	▶ CDQ0517 ▶ DCCD 08901-AN5 ▶ DCCD 08016-43 ▶ DCFR 07416-5 ▶ DCGP 07416-9 ▶ DCGP 07416-16		

GPc 6

Supplier Quality Plan (SQP) – Quality Planning during Procurement

Task Owner	Project Purchasing		
1. Description	Time table of sourcing process including all quality related deliverables and responsibilities. Monitoring of deviation. The SQP has to be in line with the overall project schedule.		
2. Result	All necessary actions until SOP are known and scheduled. Responsibilities are defined. Binding resource planning.		
3. Scope	For all parts (drawing related parts and components, catalogue and company standard parts) as well as software. SQP Scope 1 - 3		
4. Due date	Draft after project start (QG1). Detailed SQP after TSR (Technical Sourcing Review), before initial sample order.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ SQP master document	Project Purchasing	Appendix GPc 6
	▶ Project Schedules	Project Leader	
	▶ Up-to-date drawings (incl. important characteristics), Bills of Material (BOM), material specifications	Development	
	▶ Decision of SQP Scope 1 - 3	Project Purchasing & Development	
	▶ Technical requirements, specifications (incl. prototype tests)	Development, Project Leader	
	▶ Validation plan / approval plan	Development, Project Leader	
	▶ Responsibilities of project team members	Project Leader	
	▶ FPA/P1	Commodity Purchasing	
6. Method	▶ Project Purchasing, PUQ Technical Specialists and development decide SQP Scope for components ▶ DIN, standard parts and assemblies (all single parts released) are SQP Scope 1 ▶ In case of SQP Scope 3 collaboration of PUQ Technical Specialists is required (contracting) ▶ Adopt SQP master document based on sourcing process details such as specifications, validation plan, FPA/P1 results and parts release ▶ Propose back scheduling based on project / sub-project plan ▶ Propose responsible person for each task in SQP ▶ Overall resource planning and request for additional capacity if required ▶ Responsible persons to confirm task deadlines of SQP (incl. supplier) ▶ Monitor and update SQP ▶ Set up action plan in case of deviations from project plan ▶ Evaluate necessity Safe Launch and planning of respective measures ▶ Sustainable, economic and responsible behaviour of suppliers and their sub-suppliers (see „Code of Business Partners“)		
References	▶ DCCD 08016-43 ▶ DCFR 07416-6		



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GPc 7

Specification up-to-date & complete

Task Owner	Project Purchasing		
1. Description	The check list ensures that RfQ package contains all required documents and these are up-to-date and complete. For ensuring the up-to-dateness of the specification before relocation, localization, change of supplier, setting second source, ratio projects, process changes, outsourcing a measurement of the current manufacturing status from the current supplier and if required an adjustment of the drawing will be effected. The responsible purchaser decides when and which documents have to be delivered to supplier.		
2. Result	Specification up-to-date and complete for RfQ. Prioritized document delivery process for inquiry.		
3. Scope	All requests for quotation (RfQ). SQP Scope 1 - 3		
4. Due date	Start RfQ, but not later than Technical Sourcing Review (TSR).		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 7	Project Purchasing	Appendix GPc 7
	▶ Specification for process / parts release (ISIR) GPc 12	Project Purchasing, Purch. Q-Mgmt. Plant	
	▶ Up-to-date drawings (incl. important characteristics), Bills of Material (BOM), material specifications, maximum storage periods, consideration guidelines regarding prohibited substances and/or declarable materials	Development	
	▶ Description of important characteristics	Development	
	▶ Common and Bosch Rexroth Standards	Development	
	▶ Technical specification, specifications (incl. prototype tests)	Development, Head of Project	
	▶ Specification for delivery and local/global packaging (Logistic specification)	Logistics	
	▶ Legal regulations and requirements of the target market	Legal department	
	▶ Relocation, localization, change of supplier, setting second source, ratio projects, process changes, outsourcing	Project Purchasing	
6. Method	▶ Based on the check list, project purchasing gathers required RfQ specifications ▶ Check whether project effects Bosch Rexroth key competencies or involves critical parts. Discuss with technology manager manufacturing ▶ Decision to be made when and which documents have to be delivered to supplier ▶ Long-term and delivering on benchmark-level Bosch Rexroth suppliers do not have to get entire specification package (Attention: make sure specifications are up-to-date) ▶ Responsible departments ensure that current documents, specifications and information are available ▶ QB-I part B is part of the test planning and of TSR (as needed)		
References	▶ N2580-1 ▶ CD 03800-007 ▶ N67W 0.2 ▶ DCCD 08016-43 ▶ DCFR 07416-7 ▶ DCWI 12092-2 (part A) ▶ DCPD 06414-001 ▶ DCPD 06414-001-AN1 - AN8		

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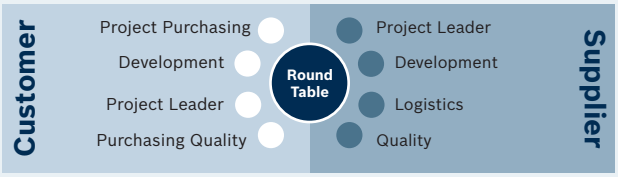
GPc 8

Technical Sourcing Review (TSR)

Task Owner	Project Purchasing		
1. Description	Technical review of all issues arising out of inquiry and quotation which are relevant to the feasibility of process, technology, quality, logistics, deadlines and costs, incl. consideration of sustainability criteria within the supply chain. Part of the TSR is the discussion of the measurement plan for assurance of a failure-free start of production (safe launch). TSR is the final review at the end of RFQ procedure. TSR identifies risks of parts, processes or potential difficulties at supplier (and its sub-suppliers) for escalation to project management. Optionally: Performance of Pre-TSR (see “Method”)		
2. Result	Quotation is understood. Supplier realizes specifications and important characteristics. Risks in the supplier’s (and its sub-suppliers) process are indicated. Supplier can be recommended for nomination.		
3. Scope	Drawing related parts and components. TSR will be conducted only if supplier has high potential for nomination. TSR normally coincide with feasibility confirmation of supplier in case of parts already validated. SQP Scope 2 & 3		
4. Due date	The TSR takes place at the end of RFQ process.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 8/9 (TSR resp. Pre-TSR)	Project Purchasing, Develop., Logistics, Purch. Q-Mgmt.	Appendix GPc 8/9
	▶ Quotation drawings, potential solutions	Supplier (Development)	
	▶ Quotation	Supplier	
	▶ Planning on safe launch	Project Purchasing	
	▶ Preliminary BOM	Development, Project Leader	
	▶ Logistical and technical requirements, specifications (incl. prototype tests)	Logistics, Development, Project Leader	
	▶ (Preliminary) validation plan / qualification test plan	Development, Project Leader	
	▶ Feasibility studies of processes	Supplier (Production)	
	▶ Lessons learned, complaint book of similar products (end of line, 0-km, field)	Project Purchasing, Supplier	
	▶ Parts planning from prototype to initial sample	Project Purchasing, Purch. Quality Mgmt. Plant	
	▶ Feasibility confirmation important characteristics of similar products	Supplier (Quality), Purch. Quality Mgmt.	
6. Method	▶ Project purchasing initiates TSR with supplier, Purch. Quality Mgmt. (plant and Tech. Specialists) if necessary, logistics, development and manufacturing (relocation internal to external) ▶ Supplier presents quotation and potential technologies to fulfill required specification ▶ All important characteristics and lessons learned gained from previous projects are defined ▶ Compare product-specific requirements and important characteristics with supplier’s solutions ▶ Evaluate potential risks - counter measures to be defined and escalated to Project Review (QG2) ▶ Discuss measurement plan for safe launch (if required) ▶ Important agreements resulting from TSR may become part of the QAA ▶ Pre-TSR: Clarification of technical requirements to ensure a valid offer. Completion of full TSR after sourcing decision only with final supplier. For new suppliers full TSR before sourcing decision.		
References	▶ DCCD 08016-43 ▶ N67W 0.2		



Only a possible selection of participants. Group of participants might be extended by other special departments.

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GPc 9

Feasibility Confirmation of Supplier

Task Owner	Project Purchasing		
1. Description	Examine feasibility of customer requirements or validated product specifications together with the supplier.		
2. Result	Supplier confirms process capability and fulfillment of commercial requirements and important characteristics – also by means of technical risk analysis. Q-Problems of similar parts (lessons learned) are considered. Potential risks are addressed. Process limits are defined.		
3. Scope	Drawing related parts and components. SQP Scope 2 & 3		
4. Due date	During or subsequent to Technical Sourcing Review (TSR). But latest prior to the release of series tooling and manufacturing facilities.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 7	Project Purchasing	Appendix GPc 7
	▶ Check list GPc 8	Project Purchasing, Logistics, Development, Purch. Quality Mgmt.	Appendix GPc 8
	▶ Up-to-date drawings (incl. important characteristics), Bills of Material (BOM), material specifications	Development	
	▶ Technical requirements, specifications (incl. prototype tests)	Development, Project Leader	
	▶ Quotation price and delivery-on-call planning	Project Purchasing	
	▶ Contracting with suppliers (SE, corporate agreement, QAA, non-disclosure agreement)	Commodity Purchasing	
	▶ Technical risk analysis (recommendation: FMEA)	Supplier (Quality)	
	▶ Logistics specification (incl. packaging instructions)	Logistics	
	▶ Specific release requests (e.g. PPAP)	Project Leader	
	▶ Validation plan / approval plan	Development	
6. Method	▶ Purchasing initiates the feasibility review with the supplier ▶ If a complete validated solution is available, TSR and Feasibility Confirmation coincides ▶ Purch. Quality Mgmt. (plant and if necessary Techn. Specialists), development, purchasing, logistics, if necessary manufacturing (at relocations internal to external) and supplier discuss specifications, important characteristics, validated solution and the manufacturing process ▶ Feasibility of specifications and important characteristics to be documented ▶ Risks are assessed and addressed with a capable process. No critical issues in Technical risk analysis (recommendation: FMEA) ▶ Identify process limits and confirm inspection equipments and methods for capable process ▶ Supplier signs the Feasibility Confirmation check list		
References	▶ CD 80010-031/-032 ▶ DCCD 08016-43 ▶ DCGP 07416-8 ▶ DCFR 07416-7 ▶ DCFR 07416-8		

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GPc 10

Inspection Planning

Task Owner	Project Purchasing		
1. Description	Planning and definition of incoming inspections for sample and serial parts, if applicable including test equipment procurement		
2. Result	Required testing capacity, test methods, characteristics, test positions on the part, sample size and test frequency determined. Test equipment is available before delivery of the initial samples and ready to use (incl. test equipment capability examination). Testing (test methods, characteristics) is agreed upon with the supplier.		
3. Scope	Drawing related parts and components. SQP Scope 1 to 3		
4. Due date	Before initial sample production, at the latest before delivery of initial samples.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 3	Project Purchasing, Development, Purch. Quality Mgmt.	Appendix GPc 3
	▶ Check list GPc 12	Project Purchasing	Appendix GPc 12
	▶ OPL out of TSR, with reference to important characteristics	Project Purchasing, Supplier	
	▶ Up-to-date drawings (incl. important characteristics), Bills of Material (BOM), material specifications	Development	
	▶ Specifications, standards, regulations, test specifications, customer requirements	Development	
	▶ Design-FMEA	Development	
	▶ Technical risk analysis (recommendation: FMEA)	Supplier	
	▶ Lessons learned, complaint book (end of line, 0-km, field) and incoming inspections of similar products	Project purchasing, Supplier, Purch. Quality Mgmt. Plant	
6. Method	▶ Internal coordination of inspection method and inspection characteristics for preparation to the TSR, between Project Purchasing, Development and Purch. Quality Mgmt. Plant, if applicable amended by specialist department ▶ Creation of Q information package in the system by Project Purchasing ▶ Determination of test method, characteristics and frequency (dynamisation rule) between Project Purchasing, Purch. Quality Mgmt. Plant and the supplier considering the checklists GPc 3 and 12 as well as the specification out of the TSR ▶ Creation of inspection plan in the system (e. g. SAP) by Purch. Quality Mgmt. Plant For every inspection characteristic the following questions need to be answered: – What needs to be checked? (Determination of test characteristics) – How much needs to be checked? (Determination of test extend) – How often needs to be checked? (Determination of frequency of testing) – Check needs to be carried out using what? (Determination of test equipment) – How needs to be checked? (Determination of type/method of test) – When needs to be checked? (Determination of test time) – Who needs to check? (Determination of test personnel) – Where needs to be checked? (Determination of test location) – How to provide evidence? (Determination of record) ▶ After SOP the maintenance and adaptation of the (serial) inspection plans is carried out by Purch. Quality Mgmt. Plant		
References	▶ DCCD 08016-43 ▶ DCCD 08918	▶ DCFR 07416-3 ▶ DCFR 07416-12	▶ DCWI 12092-2 (part B)

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GPc 12
Initial Sampling

Task Owner	Project Purchasing		
1. Description	Initial sampling is one of the series production release preconditions. Initial samples are manufactured with serial production equipment under serial conditions, i. e. initial samples are representative for series production according to respective revision level.		
2. Result	Proof of conformity to the drawings and specifications, of parts and components, as one of the series production release preconditions.		
3. Scope	For all drawing related parts an components, catalogue parts, company standard parts as well as software. SQP Scope 1 - 3		
4. Due date	Release type and scope defined before RfQ. Initial sampling can be carried out during the process approval (before function/endurance tests), however it must be completed before Bosch Rexroth initial sampling with the customer.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list	Project Purchasing	Appendix GPc 12
	▶ Customer requirements for release	Sales	
	▶ Up-to-date drawings (incl. important characteristics), Bills of Material (BOM), material specifications, specification sheet (software)	Development	
	▶ OPL out of TSR, with reference to important characteristics	Project Purchasing, Supplier	
	▶ SQP	Project Purchasing	
	▶ Initial sample inspection plan	Purch. Q-Mgmt. Plant, Project Purchasing, Development	
	▶ Production Process Approval	Project Purchasing, PUQ Techn. Specialists, Supplier	
	▶ Initial sample documentation, initial sample parts	Supplier	
6. Method	▶ Extent of initial sampling defined by project team or during the ISIR Point CIP with check list GPc 12 ▶ Send initial sampling extent to supplier with RfQ ▶ Use of electronic initial sampling (eISIR), where sensible and technically feasible ▶ Initial sampling details are discussed with supplier via check list during TSR ▶ Discussion of initial sample report and serial inspection plan with operating department ▶ Information project purchasing to purch. quality mgmt. plant, for consideration of important characteristics out of technical discussions with supplier ▶ Project purchasing orders initial sample according to check list GPc 12 ▶ Performance Production Process Approval (PPAP on customer request), according to decision (SQP) ▶ Supplier delivers initial samples, incl. manufacturer´s or sub-supplier marking, together with initial sample documentation according to purchasing order. In particular cases initial sampling and productions process approval may be carried out on-site ▶ Cross-check initial sample delivery. If reliability of supplier is proven, the sampling extent of the supplier may be reduced and/or DC may abstain partly or completely from cross-checking the initial sample test report (initial sample submission level) ▶ Respective release process owner summarizes initial sample inspection results as one of the series production release preconditions		
References	▶ N67W 0.2 ▶ DCCD 08016-43 ▶ DCFR 07416-12		

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GPc 16

Production Process Approval (PPAP on customer request)

Task Owner	Project Purchasing		
1. Description	Examination of production and inspection processes and associated documentation based on product specification to release series production. Review all documentation, open point lists, audit reports, technical risk analysis (recommendation: FMEA) etc. If a supplier assigns a sub-supplier to produce a product (partly or complete production) the supplier is committed to maintain an efficient sub-supplier-management and to carry out resp. permute the production process approval described in this document for all processes and sub-processes involved in production correspondingly (incl. supplier and parts release). Start of initial sample inspection at Bosch Rexroth starts, if all significant open points out of the production process approval resp. the process audit are finalized.		
2. Result	Series process is stable, validated and controlled. Supplier is able/prepared to deliver products and components on call, according to the agreed specifications.		
3. Scope	Drawing related parts and components. SQP Scope 3		
4. Due date	▶ Before or simultaneous to start of initial sample production at the supplier (prior QG4) ▶ In case of process changes, relocation and tool maintenances/changes etc.		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Check list GPc 16	Project Purchasing	Appendix GPc 16
	▶ OPL out of TSR, with reference to important characteristics	Project Purchasing, Supplier	Appendix GPc 8
	▶ Technical requirements, specifications	Development, Project Leader	
	▶ Quality agreements (QAA, delivery specification)	Project Purchasing, Supplier	
	▶ Design FMEA	Development	
	▶ Technical risk analysis (recommendation: FMEA) / Process plan	Supplier	
	▶ Test equipment and machine capability	Supplier	
	▶ Tool release documents	Supplier	
	▶ Information about changes in process, location, supplier, material, design and tool	Supplier	
	▶ Contingency plan	Supplier	
	▶ SQP checklist of open issues	Project Purchasing	
	▶ Logistics concept	LOG, Supplier	
6. Method	▶ Supplier informs Bosch Rexroth after series production process is stable in place or in case of process change ▶ Bosch Rexroth decides whether to approve production process on site, if applicable, by using “remote solutions” (MS TEAMS) ▶ Verification of the required process release documents (e. g. Technical risk analysis (recommendation: FMEA), tool release, process capability study, maintenance schedules, contingency plan etc.) ▶ Monitor implementation of agreed measures and issues from Technical risk analysis (recommendation: FMEA), audit report etc. ▶ Monitor efficiency of counter measures from preproduction and lessons learned ▶ Qualification matrix and proof of measures performed are available ▶ Control plan in running series production (measuring and test equipment, inspection criteria, method and cycle) ▶ Examine packaging – container and handling (avoid damage during transport, pollution, humidity etc. – all required characteristics such as bar code, serial number, notation etc. are available) ▶ Execution of a CSR quick scan, if required (three resp. five year cycle), use of CSR quick scan APP ▶ Request emergency concept		
References	▶ N2580-1 ▶ CD 80008-107	▶ CD 80010 (CP-CD10) ▶ DCCD 08016-43	▶ DCFR 07416-12 ▶ DCFR 07416-16

* Terminus “Key Product Characteristics” only allowed in connection with customer requirements according to IATF16949.

GPc 17

Key Performance Indication and Policy Deployment – out of preventive Quality Assurance

Task Owner	Project Purchasing		
1. Description	Regular quality evaluation and tracking of measures for new projects and specific analysis of potential disturbances for defined period.		
2. Result	Evaluation of VQS work of project purchasing by analysing and evaluating the adherence of SQP milestones and the quality situation of SOP		
3. Scope	Development, second-source, relocation, ratio and change projects. SQP Scope 1 - 3		
4. Due date	Ongoing from start of SQP resp. for a defined period (e.g. 12 months after SOP)		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ Number of initial sample recursions in the course of the initial sample release process	Project Purchasing, Purch. Quality Mgmt. Plant	
	▶ SQP milestone	Project Purchasing	
	▶ All completed and pending complaints (notice of defects) from development, good receipt, manufacturing and if applicable customers	Supplier, Purch. Quality Mgmt. Plant, Development	
	▶ Trend analysis, statistical evaluation (initial sample recursions, PUE ipm, ppm, ipm, failure costs, concessions)	Project Purchasing, Purch. Quality Mgmt. Plant, Controlling	
6. Method	▶ Analysis of cause of initial sample recursions during sampling process and introduction of measures ▶ Transfer of product specific know how to PUQ Technical Specialists ▶ Ongoing evaluation of Q key performance indicators (initial sample recursions, PUE ipm and ipm) and number of concessions, for alignment of strategy with development and commodity purchasing ▶ Exceeding of SQP milestones are analysed regarding cause and initialization of measures ▶ Monitoring number of complaints after SOP (ramp-up phase) and immediate introduction of optimization measures in case of increased number of complaints through project purchasing ▶ Increased number of complaints indicates a non-robust design or a non-robust process. Initiation CIP or initiation change process (ECR) ▶ There are dashboards available for the different Q-KPI		
References	DCCD 08016-43 DCCD 08016-44 DCCD 08016-45 DCCD 08927		

GPc 18

Key Performance Indication and Policy Deployment – after SOP

Task Owner	Purchasing Quality Management		
1. Description	Regular quality evaluation and tracking of measures regarding all supplied products for identification of focus suppliers. Assure conformity to the specifications.		
2. Result	Analysis and assessment: Overview about quality and current pending complaints, as well as achievement of targets.		
3. Scope	All suppliers (EZRS & HAWA). SQP Scope 1 - 3		
4. Due date	Ongoing, at least monthly		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ All completed and pending complaints from incoming inspection, manufacturing and customers in current year	▶ Supplier, Purch. Quality Mgmt. Plant, Service, Manufacturing, Quality Mgmt. and HSE	GPc 44
	▶ Trend analysis, statistical evaluation	▶ Purchasing Quality Controlling, Logistics, Purch. Quality Mgmt., Supplier	
	▶ Target agreements	▶ Purch. Quality Mgmt., Supplier, Head of Purchasing, Commodity Purchasing, Project Purchasing	
	▶ Material field strategy, escalation level, supplier development programs, blocking mechanism	▶ Commodity Purchasing	
6. Method	▶ Analysis KPI* results periodically ▶ Ongoing evaluation of supplier's 8D Reports regarding complaints, 8D assessment, setting up failure clusters and systematically improvement of 8D quality ▶ Ongoing definition of highrunner suppliers and escalation to material field responsible and experts ▶ Application of Bosch Rexroth escalation management, especially management involvement at E3 cases ▶ Selection supplier for Q supplier programms by material field purchasing, logistics and purchasing quality management ▶ Coordinate supplier strategy if several business units are affected ▶ Use of PDCA charts for tracking KPI* development as proof of effectiveness for the initiated actions ▶ Analysis of complaints by means of KPI* kind of appearance (Where does the failure occur?) and deviation of measures according to risk and severity ▶ Agreement of targets (e. g. KPI*, 8D quality) ▶ Introduction of Q-table at supplier ▶ Evaluation problem solving competence and measures for improvement at supplier ▶ Application of problem related Process Improvement Reviews (PIR) and Q-Alert method ▶ Commodity purchasing, logistic and purchasing quality management review measures and decide to escalate if necessary		
References	▶ CD 80006 (CP-CD 06) ▶ DCCD 08016-44 ▶ DCCD 08016-45 ▶ DCCD 08901 ▶ DCCD 08901-AN5 ▶ DCGP 07416-44 ▶ DCPD 14273-100		

* ipm, customer incidents, ppm, manufacturing incidents, incidents incoming inspection, failure costs, concessions

GPc 21

Auditing of suppliers (Extract)

Task Owner	Purchasing Quality Management – PUQ Technical Specialists		
1. Description	Performance of process audits within the scope of supplier qualification/development and/or performance of incident/problem related Process Improvement Reviews (PIR)		
2. Result	Coordinated audit-/PIR scheduling and handling. Accomplished process audits/PIR with scheduled/completed measures.		
3. Scope	DC suppliers worldwide. SQP Scope 1 - 3		
4. Due date	According to annual audit-/PIR-scheduling list and in case of incident/problem related cases (PIR)		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ New products and projects, SQP Scope 3	Project Purchasing	GPc 6
	▶ Critical processes, products, e.g. production process, heat treatment, ATEX, pressure equipment directive	Quality Mgmt. Product, Development, Purch. Quality Management	
	▶ Escalation – Complaint management, Top Focus Program	Purchasing Quality Management	
	▶ Ship-to-Stock/Ship-to-Line strategy	Commodity Purchasing, Logistics	
	▶ Preferred Supplier, Supplier Development	Purch. Quality Management (Supplier Development), Commodity Purchasing	
6. Method	▶ Process audits at suppliers according to VDA 6.3. The selection of the audited elements rests with the lead auditor. Normally in case of new developments of the supplier one starts with element 1 and 2, in all other cases with element 3. Choice of audit questions: Questions, which do not apply to the audited area need to be marked with “nb” and justified. During determining the questions not required a strict standard needs to be applied. ▶ The application normally takes place via WorkOn “Supplier Audit DC”. The pre-requisite is a complete supplier self-disclosure, which must be attached to the WorkOn by the applicant. ▶ The CSR quick scan needs to be requested during the process audits, during PIR or during an on-site visit of the supplier (every 3 to 5 years). In case of severe deviations DC/PUQ-PSG needs to be informed. ▶ For heat-treated parts, which are purchased from sub-suppliers, the specifications according to N67W 0.2 (list of approved suppliers or heat treatment audit) are to be met. ▶ At the end of the audit a feedback discussion is carried out with the supplier. If necessary, the supplier needs to prepare a measurement plan (dates, responsibilities, status) and to forward it to the lead auditor. Audit reports of suppliers with international, language area overlapping supply relationships have to be prepared in English language. ▶ As an alternative to the on-site audit, the audit may be performed as a remote meeting. An audit (on-site resp. remote) must be carried out in any case. Details regarding execution see DCGP 07416-21 ANH. ▶ The audit evaluation is carried out in 3 steps: A-quality capable, B-limited quality capable, C-not quality capable. In case of audit evaluation C-not quality capable a downgrading in the supplier pyramid might need to be checked. In case of measures which are not completed in time, an escalation to the PURxy mentor is effected. In case of audits with at least one major deviation the responsible Purch. Quality Management Plant receives the cover sheet. ▶ The measures defined need to be supervised and checked with respect to effectively. In case of a missed deadline a risk evaluation needs to be carried out and documented through the lead auditor. The completed audit report with the remark “Execution of audit performed in accordance to VDA 6.3” and if applicable further documents need to be filed in the SRM tool. ▶ Criteria for the performance of a re-audit are: audit not achieved, major deviations or downgrading in evaluation. Re-audits refer to the revalidation of the deviating process elements/steps (already audited modules). This is documented with a new audit report and a new audit evaluation and also filed in SRM. If no re-audit is necessary, a verifying of the introduced measures according to the measurement plan provided from the supplier is sufficient. The total evaluation of the original audit does not change.		
References	▶ CD 80008-107 ▶ DCGP 07416-21 ANH ▶ DCCD 08016-42 ▶ DCCD 08910 ▶ DCGP 07416-6 ▶ N67W 0.2		

GPc 22

Sub-Supplier Quality Management (Extract)

Task Owner	Purchasing Quality Management
1. Description	Premise: “The direct supplier of DC is responsible for the quality management of sub-supplier.” All suppliers are obligated to implement the DC requirements towards sub-supplier.
2. Result	Sub-Supplier Quality Management serves the risk minimization by defined processes along the whole supply chain. Risks in this connection are, among other things, defect parts at the customer, problems in the production at DC and high failure costs.
3. Scope	DC supplier worldwide. SQP Scope 1 - 3
4. Due date	During the entire supplier relation
5. Possible Input	**Possible Input:** — **Responsible for input:** ▶ Criteria for selection of suppliers may be: - strategic DC products respectively their parts - DC products with noticeable (high) failure rates respectively failure costs - products which caused a “Serious Complaint” - products with repeated customer complaints - critical processes at the supplier/sub-supplier - large turnover (delivery volume) - new supplier and/or processes - customer requirement — Project Purchasing, Commodity Purchasing, Purch. Quality Mgmt.
6. Method	**Elements of a Sub-Supplier Quality Management and thus requirements of DC toward his suppliers are: This includes the raw material suppliers defined through DC, and therefore also indirectly the sub-suppliers.** ▶ Disclosure of the supply chain, outsourced processes, critical paths, and information about material composition and origin ▶ Risk analysis and evaluation of the individual processes, also the outsourced processes, including the emergency and restart planning (business continuity management) ▶ Definition of a supplier selection process, qualification, and risk assessments of the supplier ▶ Guideline for preventive quality assurance, e. g. audits, technical risk analysis (recommendation: FMEA) ▶ Securing a continuously requirement management, starting with the DC requirements, especially for “important characteristics” ▶ Change management for suppliers, processes, production facilities, etc. ▶ Complaint management, including the application of the 8D methodology or similar, for customer complaints, internal complaints, and complaints toward our supplier ▶ Determination of quality indicators along the supply chain The structuring of the individual elements and therefore for the measures to improve respectively to ensure the quality of delivered products and materials (semi-finished products, components, systems, etc.) have to be set according to the potential risks. Particularly critical are failures, which could not be identified in the following process, this means will be detected later in the supply chain or in application. **The application of the requirements at the suppliers, including the raw material suppliers, could be processed like:** ▶ **Step 1:** Presentation and discussion of the DC requirements with the supplier and point out its responsibility for his sub-suppliers. ▶ **Step 2:** Description of already given, required elements, deviations, and proposals for the further proceeding by the supplier. ▶ **Step 3:** Evaluation and discussion of the given elements at the supplier by DC. If necessary, decision to measures for a complete implementation of the requirements or for the improvement of given elements. Monitoring of the measure implementation. Regular review of the Sub-Supplier Quality Management, level of implementation as well as the effectiveness of DC regulations, are to be carried out within given audits of DC at the supplier respectively at the raw material supplier. For the topic Sub-Supplier Quality Management additional audits are not required, the topic have to be included. Deviating of the above the following applies: For heat-treated parts, which are purchased from sub-suppliers, the specifications according to N67W 0.2 (list of approved suppliers resp. heat treatment audit) are to be observed.
References	▶ CD 80008 (CP-CD08) ▶ DCCD 08016-41 ▶ DCCD 08016-42 ▶ DCCD 08016-45 ▶ DCCD 08910 (CDQ 0704) ▶ DCCD 08911 (CDQ 0904) ▶ N67W 0.2

GPc 23

ECR in Purchasing (Extract)

Task Owner	Project Purchasing		
1. Description	Changes to purchased parts are processed according to respective ECR and SQM processes		
2. Result	Released engineering change request (ECR) as input for engineering change notification (ECN)		
3. Scope	DC suppliers worldwide, construction, process, logistics and documentation changes. SQP Scope 1 - 3		
4. Due date	After completion of preliminary agreement phase ECR process according to DCCD 08927		
5. Possible Input	**Possible Input:**	**Responsible for input:**	**Reference:**
	▶ New supplier, increase in capacity, relocation, supplier change	Commodity Purchasing	
	▶ Technical ratio	Project Purchasing, Commodity Purchasing	
	▶ Engineering change request / information supplier (*)	Project Purchasing, Commodity Purchasing	
	▶ Document change (e. g. correction of not up-to-date internal documents to current state)	Purchasing Quality Mgmt., Project Purchasing, Development	
	▶ Eliminate Q problem in the plant, at supplier or customer	Development, Quality Mgmt. and HSE, Purchasing Quality Mgmt.	
	▶ Implement customer requirements (Target: customer bears costs)	Development, Sales	
6. Method	▶ (*) Supplier passes engineering change request (ECR)/information to purchasing according to specification out of agreed QAA considering the risk class and existing material field specific agreements (e. g. casting). The procedure is also valid for internal ECR. ▶ **Preliminary agreement phase:** PUExx enters the change intent into the tool “oneECM”, the preliminary clarification will be decided within purchasing. Amongst others, affected plants, products, customers need to be considered. The manager evaluates the change intent and grants the release resp. declines it in the tool “oneECM”. If the preliminary agreement phase decision is that the ECR will not be carried out the mentor should inform the supplier correspondingly. ▶ **Planning phase:** ECR initiated from purchasing/supplier is introduced, explained through purchasing in the ECR meeting of the leading plant and processed through the responsible “Change representative of purchasing” (generally project purchaser) in the tool “oneECM”. Further processing is carried out as engineering change request (ECR) by the special departments. ▶ Required customer involvement needs to be decided on as soon as possible, latest however in the planning phase. The decision is confirmed in writing through sales. ▶ The supplier quality plan (SQP) is created and started, if required. ▶ The completion of the planning phase forms a review through the ECR review team and, in case of approval, the release of resources and budget. ▶ **Processing and validation phase:** Continuation of SQP with the supplier. ▶ The validation demand needs to be clarified and adjusted with all plants effected by the ECR. ▶ Execution of product and process release (if required) according to defined and in TSR with supplier agreed sampling extend (e. g. adjustment technical risk analysis (recommendation: FMEA), required capability certificate, process release on side, internal product validation). The result is a released initial sample test report. ▶ **Implementation phase:** Preparation and distribution of released engineering change notification (ECN) through the documentation site. After the customer’s requirements have been met, delivery release is given, if required, with the customer’s consent. ▶ Start the follow up processes in purchasing: document exchange and adjustment of relevant contracts. ▶ The quality control during ramp up e.g. in case of new suppliers is carried out in line with the SQP (Hand over report DCFR 07416-6). ▶ **Valid for all phases:** The review result out of the SQP mile stones (e. g. TSR DCFR 07416-8) are presented in the ECR review team and - if applicable - existing risks (e. g. adherence of deadlines, expenses, technical feasibility) discussed and decided and, if necessary, escalated into the ECR steering committee.		
References	▶ CD 80010 (CP-CD 10) ▶ DCCD 08016-43 ▶ DCCD 08921 ▶ DCCD 08927 ▶ DCFR 07416-6 ▶ DCFR 07416-8		

Notes

Matrix of Responsibilities and Process Activities

Mile-stone	No	Process step Procurement Process	Result/Documentation	Com. Purch. (MFV)	Proj. Purch. (PUE)	Head of Purch. Quality Mgmt.	PUQ Techn. Specialists	PUQ plant	Purchasing Controlling	Development	Head of Project PEP	Manufacturing	Logistics	Product Management	Resp. release process owner	QMM Plant	Experts	Supplier	DCCD 08016-0..
	1	Manage and develop supplier strategy regarding market development and align-ment with part specific requirements	▶ Specific requirement profiles (product, raw material, part family) ▶ Defined software-category/business case	R	S		S			S									41
	2	Selection and verification of suitable suppliers	▶ Part family/material specific requirements know. Future requirements to technologies for new products. ▶ Evaluation of PE competence	R	(S)														41
	3	Innovation scouting & routing Generally Supplier self-disclosure, solvency disclosure, CSR-Quick-Scan, certificates, non-disclosure agreement, evaluation of technical competency,...	▶ Ideas out of supplier market ▶ Identified innovative products and manufacturing technologies ▶ List of pre-selected suppliers	R	S		S			(S)								S	41
QG0	4	Contractual agreements + supplier release process	▶ Overview of potentially suitable suppliers ▶ Requirements reg. certificats, CSR, techn. competence etc. are satisfied ▶ Signed corporate agreements uploaded in SRM system (incl. QAA) ▶ Supplier created in the system ▶ Process responsible and involved have been informed	R	S		A[5)]			I			S					S	41
HD* 1		**Supplier contracted & potential evaluated**																	
	5	Assignment for qualification and/or enabling resp. development of suppliers	▶ Work packages on improvement measures have been defined ▶ Qualification team and project target have been defined		A		R											S	42
	6	Draw up, track and implement action plan	▶ Action plan defined (responsibilities, deadlines) ▶ Guidelines regarding CSR considered	S	S		R	S		S							(S)	S	42
	7	Validate implementation of measures	▶ Complete action plan (Minutes with evaluation)	S	S		R	S		I							S	S	42
	8	Determine special customer requirements and special issues regarding standards/ directives for release	▶ Transfer of special customer requirements to the release plan, e.g.: specific tests, proof, sampling to customer, part submission warrant to customer, safety related specification acc. to DCCD 08926		R		S	S		S				S		S			43
	9	Definition of effort/integration/ contracting of conterminous departments & service provider	▶ Defined SQP-Scope (1 to 3) ▶ Evaluation business model ▶ Estimation of required resources	S	R		A[1)]	S		S									43
	10	Define packaging/transport	▶ Specifications for delivery and local/ global packaging (logistics specifications)		R			S		S		S	S						43
	11	Define requirements for process release **→ GPc 3, 5, 6 and 12**	▶ Defined sampling extend ▶ Temporary SQP		R		S	S		(S)						S			43
QG1	12	Pre-Sourcing Meeting/ White list selection	▶ List of potential suppliers, who comply with customer and DC requirements	R	S		A						S					S	43
	13	Preparation inquiry package and review of document **→ GPc 5 and 7**	▶ Specifications/logistics specifications ▶ Quantity scenario ▶ Lessons Learned known problems ▶ Inquiry documents are complete and up-to-date		R		S	S		S			S	S					43
	14	Send RfQ to supplier, and if necessary, carry out concept competitions	▶ if applicable, concept competition ▶ Feedback tenders/concept presentation (Pilot Quotes)		R		S			(S)			(S)					S	43
HD 2		**Quotation received**																	
	15	Pre-selection potential suppliers	▶ Define at least 2 suppliers out of tender comparison/concept competition		R		S[4)]	(S)		S			S						43
	16	Define SE project	▶ SE project preliminary documentation ▶ SE agreement	I	S		(S)	S		S	R	S	S	S				S	43
	17	Carry out Technical Sourcing Review **→ GPc 8**	▶ Inquiry understood ▶ Suggest supplier for Sourcing Meeting ▶ Particular risks named (DC & supplier) ▶ A/B samples are available		R		S[1)]	S		S	(S)	(S)	S	(S)				S	43
QG2	18	Comparison of quotation	▶ Completed CoQ form ▶ Announcement global sourcing meeting at person responsible for supplier/material field	(S)	R		S						S						43
	19	Global sourcing Meeting	▶ Decision for supplier ▶ Documentation of decision	R	S		S			I	I								43
	20	Start release and sampling process SQP Planning manufacturing sample/assembly test [3)] as well as ordering of tools **→ GPc 6, 12 and 16**	▶ Full definition of requirements for release (Finalized SQP) ▶ Release and sampling process agreed upon with supplier		R[2)]		S[1)]	S		(S)	(S)	S						S	43
	21	Perform function/endurance test (if stipulated), in accordance with specifications of development	▶ Report on function and endurance tests		S					R		S							43

Mile-stone	No	Process step Procurement Process	Result/Documentation	Com. Purch. (MFV)	Proj. Purch. (PUE)	Head of Purch. Quality Mgmt.	PUQ Techn. Specialists	PUQ plant	Purchasing Controlling	Development	Head of Project PEP	Manufacturing	Logistics	Product Management	Resp. release process owner	QMM Plant	Experts	Supplier	DCCD 08016-0..
	22	Order initial samples	▶ Initial sample order with reference to requirements for product and process release ▶ Incl. environmental requirements ▶ Mark order type in SAP accordingly		R		(S)	S					I					I	43
QG3	23	Prepare sample release (organization of sample release) **→ GPc 12**	▶ Update release and sampling process confirmed with supplier ▶ Resources, deadlines, all details are planned and confirmed		R		(S)	S		S	(I)	(S)	I					S	43
HD 3		**Initial samples ordered, sample release prepared**																	
	24	Perform process check (if stipulated) **→ GPc 16**	▶ Awarding protocol (software), certificate of process proficiency. In case of negative result coordination of further proceeding between PUE and PUQ Technical Specialists.		R		S[1)]	S		(S)								S	43
	25	Initial sampling (e.g. geometry, measures, function, material, ...)	▶ Proposal for release ▶ Verified EMPB ▶ Documentation for release		I		S	R		S								S	43
	26	Final release initial sample	▶ Parts and process released		I			I							R[1)]			I	43
	27	Implement decision for release in SAP and start series release	▶ Project purchasing hands over project to commodity purchasing/logistics after the first three error free serial deliveries out of different production batches/ charges. If the number of serial deliveries is below the required number (<3) (e.g. in project or service business) the technical supervision is carried out through project purchasing up to twelve months after part SOP. ▶ SAP Q-stock material info report changed to series ▶ Start recording recursions initial samples (PUE-KPI)	I	S		S	R		S	I		I	(I)				I	43
HD 4		**All releases completed**																	
	28	Transfer product specific know how	▶ Consideration of lessons learned out of earlier projects / of sampling phase	I	R		S	(S)		S									44
QG4	29	Transfer of parts (e.g. order book, buyer group, info record, delivery schedule, ...)	▶ Signed valid agreement with supplier ▶ End of project ▶ Delivery according to order specification	S	R								S					S	44
HD 5		**Start of serial production**																	
	30	Logistic incoming inspection	▶ LOG-PLKZ, DPR ▶ book goods in IT system										R						44
	31	Technical incoming inspection	▶ Check on Skip (R: LOG) ▶ Test results of incoming inspection	S	S			R					I						44
	32	Approval test lot (delivery)	▶ Released delivery ▶ Determination of data on product related history of quality		I			R					I						44
QG5	33	Complaint management Start complaint management or change management process, cause analysis, define action plan and tracking of realization	▶ Defined action plan for start subsequent process inclusive consideration of failure costs. ▶ Error permanently eliminated	S	R		(S)	S		S		(S)	(S)			S		S	44
	34	Monitor & report QKL-data (inc/mio_p, ipm, recursion initial sample, ppm, project costs, SQP milestones according to schedule)	▶ e.g. reports out of PILUM, SAP or BOSIS-Q	S	S		S	S	R				S			(I)			45
	35	Analysis & assessment of suppliers KPI and QKL incidents	▶ Proposal for nominations Q programs	R	S		S	S	S				S						45
	36	Define QKL measures	▶ Q program, Supplier learning factory ▶ Relocation projects, technical projects ▶ Negotiations ▶ BPS measures	R	S		S	S		(S)			S						45
	37	Track, revise and escalate measures	▶ Degree of attainment of the objectives ▶ Action plans	R	S		S	S	S	(S)			S					S	45
CIP		**Continuous Improvement Process**																	
	38	Supplier performance assessment	▶ Overall estimation in SRM tool ▶ Recommendation for supplier award	R	S	I	S	S					S					S	
	39	Supplier development Q methods	▶ Qualification for 8D/MRC (problem solving) ▶ 5W method, techn. risk analysis (recommendation: FMEA), capability Q table, sub-supplier management, etc.	S			R	S										S	
	40	Continuing improvement process (quality initiative, supplier talks, value stream mapping, etc.)	▶ Optimization QKL ▶ Qualification for new projects	R		A	S	(S)		(S)			S					S	
	41	Series phase (change, modification, relocation)	▶ Change request (ECR) **GPc 23**	S	R		S	I		(S)								S	

* Hardness Degree

[1)] Mandatory: Collaboration PUQ Technical Specialists at least at scope 3 required;
Optionally: Collaboration PUQ Technical Specialists at scope 1 and 2 on request (contracting)
[2)] If the parts are delivered to several plants in case of process changes for sampling/release the plant with the highest quantity required needs to be included in the sampling process
[3)] In the lead plant and in the affected manufacturing plant (as far as already known at that time), if necessary at the supplier
[4)] For PEP projects PEP PrL takes over responsibility
[5)] Group leader PUQ Techn. Specialists informs PUQ-PSG in case of CSR misconduct(s) for adaption of supplier status in SRM

R = Responsible
A = Approval/Release
S = Support
I = Information
( ) = case-by-case

Tasks, which today may not yet be taken over through PUQ are under QMM responsibility.

Appendix GPc 6

Supplier Quality Plan

SQP (Supplier Quality Plan)													
Supplier selection				**Product Engineering and approval preparation**									
Material or product specific require-ments	Supplier self assessment	Supplier assessment has to be done (P1/FPA analysis, etc.)	Release for DC (SAP Input)	HD1 Customer specifica-tion and require-ments of the target market considered	Define framework for engineering phase Festlegung SQP Scope, Definition SQP Scope	Important Characte-ristics **GPc 3**	Lessons learned list similar products **GPc 5**	Local/ global packaging defined	Require-ment ISIR & Production process approval arranged (Start SQP) **GPc 6 & 12**	Preparation of pre-sourcing meeting	Inquiry docu-ments (incl. drawings & spec.) up-to-date & complete **GPc 7**	HD2 Technical Sourcing Review (TSR) incl. required planning of Safe Launch **GPc 8**	Final drawings & specifica-tion up-to-date & complete **GPc 7**
Verantw. / *Responsible*													
R: Datum/*Date* Name/*Name*													
Scope 1													
Scope 2													
Scope 3													

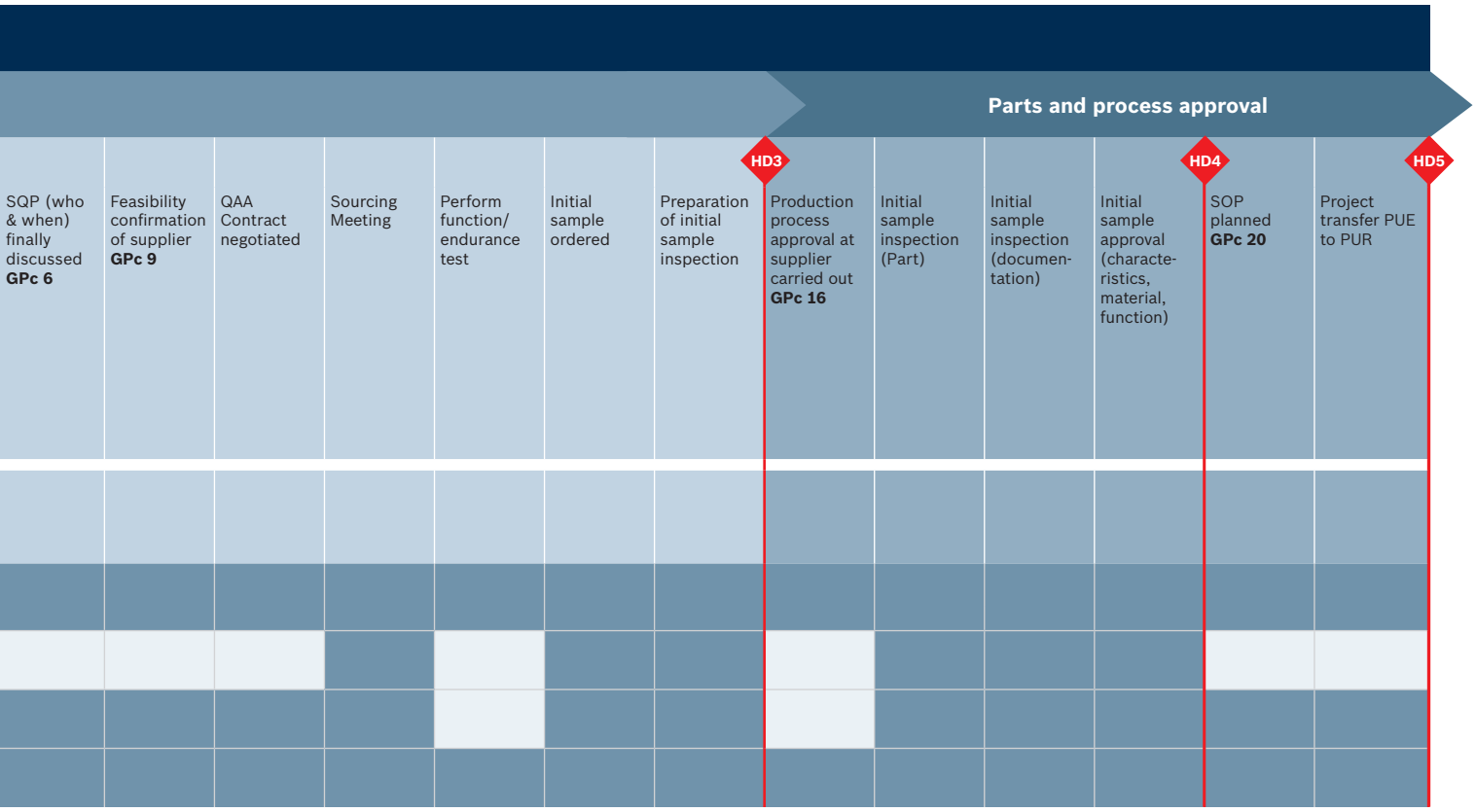
Matrix of application

1 **little extent required = low risk**

2 **higher extent required = medium risk**
- new material group
- new location
- new equipment
- new component group
- for Bosch Rexroth developed or adapted SW (no standard SW)

3 **complete extent required = high risk**
- Supplier/sub-supplier/manufacturer unknown
- new process
- new material
- SSL (Safety / Security / Legal) requirements

■ application mandatory



HD1 Supplier contacted and potential evaluated

HD2 Offer received

HD3 Initial sample ordered/Release prepared

HD4 All releases carried out

HD5 Start of serial production

SQP Scope Selection

Supplier						
supplier		material group		plant location		level def.
known	new	known	new	known	new	Scope[1]
	X					3
X			X			2
X		X			X	2
X		X		X		0

Infrastructure				
process[1]		MAE		level def.
known	new	known	new	Scope[2]
	X			3
X			X	2
X		X		0

Bauteil						
part family		material		software		level def.
known[4]	new	known	new	SSL require-ments	no standard SW	final
	X		X			3 [2]
	X	X				2
X			X			3 [3]
X		X				1
				X		3
					X	2

1 Sub-processes have to be taken into account, i.e. heat treatment, finishing
2 If no validation by engineering is requested, down grading from SQP 3 to SQP 2 is acceptable.
3 If no validation by engineering is requested, down grading from SQP 3 to SQP 1 is acceptable.
4 That means a reference part from this part family has been released already.

Appendix GPc 7

Check list Specification up-to-date & complete

SQP number		Part number	
Project		part name	
Supplier		Revision index	
Checklist owner		Date	

Updated request documents	Required	Updated request documents	Required
QB-I Process	✓	Prohibition and declaration of substances (N2580-1)	✓
Drawing	✓	Marking of parts	–
Bill of material (BOM)	–	LOG requirements specification, incl. specification for local and global packaging	✓
Material specification	✓	Measuring devices	✓
Heat treatment specification (N67W 0.2)	✓	Jigs & tools	–
QA-documentation (Techn. risk analysis (recommendation: FMEA), etc.)	–	Checklist initial sampling GPc 12	✓
Important Characteristics	✓	Specification for product validation	–
Work instructions	✓	Acceptance criteria for manufacturing process and production try-outs	✓
Norms and standards	✓	Miscellaneous	–

REQUEST DOCUMENTS APPROVED, UP-TO-DATE & COMPLETE

Start RfQ

Appendix GPc 8/9

Checklist TSR and Feasibility Confirmation Supplier

Project		Supplier	
Part number, name		Date	

TSR	Comments	Responsible	Target date
Development			
1. Which part/system function(s) were discussed to be understood by the supplier?			
2. Which potential Important characteristics has to be considered (see e.g. DCWI 12028-1)?			
Manufacturing			
3. How does the supplier ensure a efficient sub-supplier management, incl. supplier/process and part release (for all in the manufacturing involved processes and sub-processes in spite of whether partial or complete production)?			
4. Which design or production-orientated suggestions (material, equipment etc.) were made by the supplier for process optimization and/or cost reduction?			
Quality			
5. Which testing and measuring methods, i.e. measuring equipment have been specified (incl. appendix DCFR 07416-3, DCFR 07416-10)?			
6. Which manual processes of the supplier (e.g. burring, cleaning, handling, preserving processes) have been evaluated and which required examinations have been fixed?			
7. Which Q-Targets (e.g. requirement benchmark level) were discussed and accepted (QAA signed)?			
Logistics			
8. What details were agreed on the damand according to the non-binding customer preview (quantity per year)?			
9. What was agreed with regard to the logistics specifications for packaging specifications (sample packaging, package circulation (ownership, cleaning, replacement), seaworthy packaging, recovery plan, corrosion protection, ...)?			
10. How is the output quantity ensured? (Machine and tool concept, tool life, assured production quantity, cycle time, degree of capacity utilization, ...)?			
Costs			
11. Which points of the offer were explicitly discussed in order to clearly understand the offer?			
12. Does the quotation remain valid or can a supplementary quotation be dispensed with?			

Feasibility Confirmation	Comments	Responsible	Target date
Supplier			
13. Can the product be manufactured reliably according to the requirements?			
14. Can the supplier confirm the feasibility of Bosch Rexroth requirements (as defined in the TSR)?			

Remark: All questions which are marked as “No” must be addressed in open points list

Participant/date:
ffor supplier:
for Bosch Rexroth:

Remark: Latest with the proposal submittal the feasibility commitment is confirmed.

Other valid documents

Eingearbeitete Prozess-Vorschriften sind:	
Dokumentennummer	**Titel Dokument**
DCCD 08016-041	Procurement Management – EZRS, HAWA & Software, Supplier Selection
DCCD 08016-042	Procurement Management – EZRS, HAWA & Software, Qualification, enabling and development of suppliers
DCCD 08016-043	Procurement Management – EZRS, HAWA & Software, Contracting & parts release
DCCD 08016-044	Procurement Management – EZRS, HAWA & Software, First standard deliveries, purchasing after SOP
DCCD 08016-045	Procurement Management – EZRS, HAWA & Software, Key performance indicators & policy deployment

Zusätzlich mitgeltende Vorschriften sind:	
Dokumentennummer	**Titel Dokument**
N 2580-1	Prohibition and declaration of substances
CD 00301	CDQ0301 “Management of Characteristics”
CD 00517	CDQ0517 “Lessons Learned”
CD 03800	Occupational health and safety, fire protection, environmental protection, and emergency control – principles of organization and content
CD 03800-007	Attachment 7 to CD 03800: Material compliance
CD 80006	CD80006: Procurement and Supplier Management
CD 80008	CD80008: Quality Management Purchasing and Logistics
CD 80010	CD80010: Contract Management Purchasing and Logistics
CD 80015	CD80015: Corporate Social Responsibility in the Supply Chain
DCCD 08901-005	Processing of internal and external complaints – Appendix 5: Problem Solving Methods
DCCD 08914	Technical Risk Analysis (TRA) – Failure Mode and Effect Analysis (FMEA)
DCCD 08918	Management of Characteristics
DCCD 08920	Concessions
DCCD 08921	Approval of Production Processes, Products and Services
DCCD 08955	Quality Management within Purchasing at DC – Initial sample inspection, incoming inspection and complaint management
DCCD 08983	Internal reporting of quality targets
DCPD 06414-001	Material compliance – Ensuring the material compliance of purchased parts
DCPD 06414-001 A01	Material compliance – Appendix 1: Supplier Declaration Process
DCPD 06414-001 A02	Material compliance – Appendix 2: Evaluation of RoHS und REACH Declarations
DCPD 06414-001 A03	Material compliance – Appendix 3: IMDS Process
DCPD 06414-001 A04	Material compliance – Appendix 4: DC BMDS team
DCPD 06414-001 A05	Material compliance – Appendix 5: Request Sheet for supplier declaration
DCPD 06414-001 A06	Material compliance – Appendix 6: Basic material declaration @ DC
DCPD 06414-001 A07	Material compliance – Appendix 7: MaCS - Active Supply
DCPD 06414-001 A08	Material compliance – Appendix 8: Requirements SCIP database

Glossary

5W-Method	The 5 W Method is a practice of asking, five times, why the failure has occurred in order to get to the root cause/causes of the problem.
8D-Report/-Method	8 D is a short description for a concept formed of Ford-Motor-company for structured problem solving in a project group. The concept contains an action plan divided in 8 steps, which was introduced under the abbreviation 8D (8 disciplines). This concept is divided as follows: D1: Installation of Problem Solving Team D2: Describe the problem D3: Initiate interim (containment) actions D4: Identify and prove the root cause D5: Choose and verify (permanent) corrective actions D6: Take actions to prevent reoccurrence D7: Monitoring of dates D8: Praise resp. critical acclaim
Audit	An audit is a systematic inspection to determine whether a quality system complies with planned arrangements. Quality audit applies to elements of QM-System (quality system audit), the elements of production with quality risks (process audit) as well as elements affecting product quality (product quality audit).
Bosis-Q	Abbr. Bosch Purchasing Information System Quality (German: Bosch Einkaufsinformationssystem Qualität)
BOM	Abbr. Bill of Materials (German: Stückliste)
CIP	Abbr. Continuous Improvement Process (German: kontinuierlicher Verbesserungsprozess)
Complaint list	Claims list and grading of failures DCFRom prototype-build and first series production
CoQ	Abbr. Comparison of Quotation (German: Angebotsvergleich)
DC	Abbr. Drive and Control Technology, description of Bosch Rexroth AG
DCCD	Abbr. Central Department Directive of DC (German: Zentralbereichsanweisung)
DC/PU	Head of Purchasing (German: Einkaufsleitung)
DC/PUQ	Head of Quality Management Purchasing (German: Leitung Qualitätsmanagement Einkauf)
DPR	Abbr. Delivery Performance Reporting (German: Liefertermintreue)
ECR	Abbr. Engineering Change Request (German: Änderungsanregung)
EMPB	Abbr. Initial sample test report (ISIR) (German: Erstmusterprüfbericht) The initial sample inspection report contains of a cover page and the inspection result sheets agreed between the customer and the supplier as well as other required documents.
EZRS	Abbr. Product raw materials (German: Erzeugnisrohstoffe)
FG	Abbr. Feasibility Grade (German: Härtegrad)
Fit & finish	Parts release in form, fit, function and colour by assembly
FMEA	Abbr. Failure Mode and Effects Analysis The FMEA is a systematized technique which identifies and ranks potential risk in order to prioritize improvement actions.
FPA	First Plant Assessment
GPc	Abbr. Good Practice - Document with recommendation for the implementation of an obligatory standard

Glossary

HAWA	Abbr. Trade goods (German: Handelsware)
HSE	Abbr. Health, Safety and Environment (German: Arbeits-, Brand- und Umweltschutz)
ipm	Number of incidents per million parts (German: Anzahl Störfälle pro Millionen Teile)
ISIR	Abbr. Initial sample test report (ISIR) (German: Erstmusterprüfbericht)
ISIR Point CiP	Abbr. Initial Sample Point CiP (German: Erstmuster-Point-CiP)
KPI	Abbr. Key Performance Indicator (German: Kennzahl)
LOG	Abbr. Logistics
LRC	Abbr. Leadership Root Cause
MAE	Abbr. Machinery and Equipment (German: Maschinen und Einrichtungen)
MCR	Abbr. Material Cost Report
MFV	Abbr. Person responsible for material field (German: Materialfeldverantwortlicher)
MRC	Managerial Root Cause
OPL	Abbr. Open points list (German: offene Punkte Liste)
PDCA	Abbr. Plan, Do, Check, Act; (German: Planen, Tun, Prüfen, Umsetzen)
PEP	Abbr. Product Engineering Process (German: Produktentstehungsprozess) The Product Engineering Process (PEP) describes the work flows from the idea for a new product until the production and sale of the product.
PIR	Abbr. Process Improvement Review (German: Überprüfung der Prozessverbesserungen)
PPAP	Abbr. Production Part Approval Process (German: Produktionsteil-Abnahmeverfahren) Reference document to QS-9000. It includes generic requirements for production part approval for all production and service commodities, including bulk materials. The purpose of this procedure is to determine if all customer engineering design record and specification requirements are properly understood by the supplier and that the process has the potential to produce series product, meeting these requirements during an actual production run at the quoted production rate.
ppm	Abbr. parts per million (German: Teile je Million) 100 ppm means 100 non-conformities per 1.000.000 parts. This corresponds to 0,01 % non-conformities.
Process characteristics	A process characteristic is a characteristic of a part, component or system, that: a) significantly affects the following process to produce the Key Product Characteristics b) has huge effects to the error risk in the production in case of small deviations.
PUE	Abbr. Project Purchasing (German: Projekteinkauf)
PUE ppm	ramp up ppm
PUQ	Abbr. Purchasing Quality Management (German: Einkauf Qualitätsmanagement)
PUQ plant	Abbr. Quality Management Purchasing Plant (German: Qualitätsmanagement Einkauf des Werkes)
PUR	Abbr. Commodity Purchasing (German: Materialfeldeinkauf)
QAA	Abbr. Quality Assurance Agreement (German: Qualitätssicherungsvereinbarung)
QAM	Abbr. Quality-Assurance-Matrix The main targets of the Quality-Assurance-Matrix (QAM) are no delivery of faulty parts to the customer and the avoidance of failure reoccurrence. The QAM is the quality tool behind the expression “Firewall” and will support this goal by elaborating a virtual “wall” against faulty parts.
QG	Abbr. Quality Gate Quality assessment (QG0-QG5) serves the determination and recording of the quality level, from product development to start of production. The results of the evaluation are essential for the release decision concerning the following development phase (for details see DCCD 08934).

Glossary

QKL	Abbr. quality, costs, logistics (German: Qualität, Kosten, Logistik)
QI	Abbr. Quality initiative
QMM	Abbr. Quality Management and Methodes (German: Qualitätsmanagement und Methoden)
RB	Abbr. Robert Bosch GmbH
RfQ	Abbr. Request for Quotation (German: Angebotsanfrage)
Run@Rate	Activity to verify that the supplier‘s actual manufacturing process is capable of producing components that simultaneously meet: (1) on-going quality requirements (2) quoted tool capacity (3) scheduled volume requirement
SE	Abbr. Simultaneous Engineering (German: (wörtl.) „Gleichzeitige Ingenieurtätigkeit“) SE aims to lower the duration of development and to decrease development costs. Often, SE is named in connection with an organizational strategy to simultaneously develop products and processes with interdisciplinary teams.
Ship to Line Concept	Shipment directly to the conveyor/assembly
SOP	Abbr. Start of Production (German: Start der Serienproduktion)
SPC	Abbr. Statistical Process Control (German: Statistische Prozessregelung) SPC is a standard method for visualizing and controlling processes based on the results of random samples. The goal of SPC is to ensure that planned process results are achieved and the corresponding customer requirements fulfilled.
SQM	Abbr. Supplier Quality Management
SQP	Abbr. Supplier Quality Plan
SQP Scope	Classification of parts or components (level) for pre-selection of kind and extend of required scope of delivery for quality planning and release. Level 1: Common element or standard/ISO part. Production process without risks. No additional requirements in excess to the general conditions of delivery. Level 2: Common element or material according to drawing. Production process known. No additional requirements for initial sampling with test report and parts, as well as a production release on site. Level 3: Complex element or module/component with important functions. Complex production process.
SRC	Abbr. Systemic Root Cause (German: Systemische Grundursache)
SRM-Tool	Abbr. Supplier Relationship Management The Supplier Relationship Management Tool (SRM-Tool) is the leading system for strategic planning and central management of supplier relations within the entire RB purchasing organization. Via bundling information concerning supplier characteristics and performance indices it permits to save resources and to further improve the supplier base.
TCO	Abbr. Total Cost Ownership (German: Komplette Systemkosten)
TRC	Technical Root Cause (German: techn. Grundursache)
TSCA	Abbr. Toxic Substances Control Act (German: Gefahrstoff-Überwachungsgesetz)
TSR	Abbr. Technical Sourcing Review Review all issues of RFQ, relevant for feasibility of process, technology, logistics, schedule and cost.
VQS	Abbr. Preventive Quality Management (German: Vorbeugende Qualitätssicherung)

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